My Energy Marketplace

Powered by Wattwatchers

Lessons Learnt Report

Milestone 5 (April 2022 to October 2022)

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Terms and Definitions

Term	Definition
ACAP	Australian Centre for Advanced Photovoltaics
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
APVI	Australian PV Institute
ANU	Australian National University
CDR	Consumer Data Rights
DAP	Data Advisory Panel
EDP	Energy Data Platform
EV	Electric Vehicle
MEM	My Energy Marketplace
MyEnergy	Wattwatchers MyEnergy mobile application
UNSW	University of New South Wales

Project Overview and Update

The My Energy Marketplace (MEM) project, led by Wattwatchers Digital Energy, is developing a large new energy-data resource in Australia, along with the 'soft infrastructure' for increasing consumer participation in the electricity system as the energy transition unfolds.

The MEM is an approximately $9.6 million project, with $2.7 million in grant funding from ARENA being focused mainly on subsidising participation in the project by homes, small businesses and schools.

Now 3 years into the 3.5-year extended project duration, a number of key target outcomes for the project have progressed significantly despite disruption from Covid-19, global supply chain issues and cost increases, industry resource constraints and major weather events in many states of the country.

Our focus for this milestone period has been on the continued scale up of the device deployment with our rollout partners. We continued the delivery of our first commercial data services implementation with the Australian Centre for Advanced Photovoltaics (ACAP) via the University of New South Wales (UNSW Sydney).

Our own MyEnergy app development has been focused on implementing new user engagement features to support marketplace offers and energy data insights. The original intention of developing 'an app store for energy' is also being realised by our partner apps, as they integrate these offers into their own apps and customer communication channels.

The MEM project has reached some substantial milestones in this period, including:
- Over 2,850 (57%) of the planned 5,000 residential and small business smart energy management packages have been installed and deployed Australia-wide. The packages include consumer agreements to share non-personally identifying data and to receive additional offers for 3 years.
- 95 of the 250 schools have signed up for a subsidised energy and education package, despite incredibly challenging conditions for school administrators.
- Continued development of features for the consumer-facing mobile app, MyEnergy, developed for MEM customers.
- The creation and continued expansion of opportunities for MEM participation using third-party apps, dashboards and analytic tools (for example, Clipsal Solar and its Pulse app, Boom Power and Solar Analytics).

- Data from 350 utility-style electricity smart metering devices as well as data from 550 EV charging customers is also being ingested at a demonstration level to show how non-Wattwatchers devices and data can form part of the MEM. This stream of work continues to be expanded as the MEM project continues.
- Ongoing delivery of the first commercial data services customer (ACAP/UNSW Sydney)—which includes additional customer cash voucher rebates and extended data subscriptions—are contributing to the key project objective of validating and establishing a viable business model.
- Further validation of the 'soft infrastructure' developed in the project—consisting of plain language legal terms and conditions, security protocols, a data governance framework and enhanced data analysis tool sets—is being achieved through expanded customer participation and data services negotiations.

Lessons learnt and key reflections

Financial

Establishing a self-sustaining data services business model

This project has utilised funding from ARENA as a proxy for customer payments to enable an opt-in data sharing and marketplace model for consumers to access discounted monitoring.

Over the last 6 months, Wattwatchers has been ramping up discussions with our customers and industry partners about the data available from this project now that it has achieved scale of over 2,850 devices installed.

The previously launched marketplace offer for the ACAP/UNSW EDP project[1] was the first commercial engagement that demonstrates how the MEM can become a self-sustaining business model provided that additional data services customers are secured over the next 6–12 months.

We demonstrated that the price point equivalent to the 25% MEM project subsidy level is achievable and have provided similar proposals to a number of customers. Wattwatchers is also investigating other potential project opportunities to leverage the value of the MEM as part of ongoing business.

These activities are part of realising the original vision of the project to establish the MEM as a new line of self-sustaining business for Wattwatchers. This would provide additional value and services to customers, while following the secure and opt-in approach of the Consumer Data Rights (CDR) model in Australia, albeit at a substantially lower price point for both consumers and industry participants.

Social and Customer

Expanding marketplace engagement with customers is a challenge

Wattwatchers launched the first major marketplace offer for the ACAP/UNSW EDP project[1] in February 2022, providing participants with a $50 digital voucher on completion of the registration survey process and a two-year extension to the customer's MEM data agreement and subscription (for a total of 5 years).

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[1]   https://wattwatchers.com.au/how-to-get-rewarded-for-sharing-your-home-energy-data-with-researchers/

A further incentive for participants to maintain engagement in the program for an extended period is provided through a prize draw every 6 months. This prize draw may be linked to users providing a small amount of additional information to update their profile if their family energy profile has changed.

Wattwatchers launched this offer in the new Notifications Centre feature of the MyEnergy app as the in-app communications channel, as well as via a direct email marketing campaign. Wattwatchers observed a 15% uptake rate in the email campaign to MEM participants, which was well above industry average click-through rates of 2–3% for email marketing campaigns[2,3] indicating we have a highly engaged audience.

Follow up emails after the first round of communications did not result in significantly more signups, indicating that 15% sign-up appears to be the saturation level of the current audience. Furthermore, communication to MEM project participants via our rollout partners has been delayed while we work through the marketing processes to launch the offer to those participants.

Impacts from weather events and global supply chain disruption

While the major disruptions in prior periods have been due mostly to Covid-19 impacts, these have eased substantially in Australia over the last 6 months. However, our major project partners have been unable to ramp up installations to the planned levels due to a combination of weather events, supply chain disruption, cost increases and availability of personnel and customers.

Weather disruption is a part of daily operations of many of our key rollout partners who are solar installers. Solar installers need to work on the roofs of customers and are often exposed to the full brunt of the elements. Storms and elongated periods of wet weather make for dangerous and slippery conditions, and as a result of flood and storm events in New South Wales, Queensland and Victoria, this has required a large number of installations of solar with Wattwatchers MEM devices to be postponed and rescheduled.

During the same period, global supply chain impacts have delayed product shipments such as solar panels and inverters, as well as increasing prices in an industry that has only seen decreasing prices for the last 5–10 years.

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2   https://mailchimp.com/resources/email-marketing-benchmarks/
3   https://www.campaignmonitor.com/resources/guides/email-marketing-benchmarks/

These coincident events have also occurred in a period where there are increasing impacts to the general economy, as many of us are well aware, with much higher than normal inflation due to both domestic and global issues.

All of these issues have impacted end customers with delays to installations, reconsideration of household budgets and installation availability as well as new customers receiving prices higher than in the years before. This has delayed the ramp up of new Wattwatchers devices and has now put substantial pressure on the closing stages of the project to achieve the original targets.

Wattwatchers continues to work closely with our rollout partners to work through these issues to meet and exceed the targets and objectives of this project.

Data services customers want more linked metadata

As Wattwatchers has continued to engage with our customers and industry partners around the opportunities provided by utilising the MEM Data, a number of these customers have now entered into agreements to establish proof-of-concept projects using MEM data services.

This has included data analysis projects in the property sector to link property information with local energy consumption data, analysis of solar generation potential for local government areas and data for an artificial intelligence and machine learning home energy management project with a group of students from an international university.

These data services projects have required us to understand how MEM data customers expect to access and use the data as well as the additional associated metadata requirements. This additional metadata includes property size, number of occupants and occupancy periods and information on major appliances that is essential for processing the data insights.

Wattwatchers is not currently collecting this additional metadata and is planning to rollout new features over time to support gathering this enhanced data with the customers permission to share the anonymised information in the same way the MEM energy consumption and power quality data is made available.

Technical

New account management requirements for Apple apps

From January 2022, all apps in the Apple App Store that allow for account creation must also allow users to initiate deletion of their account from within the app.[4] This is part of overall security and account management processes that give consumers more control over their data and accounts.

We have responded to this requirement with the implementation of these features in the MyEnergy app for users to allow users on both Apple iOS and Google Android devices to delete their account.
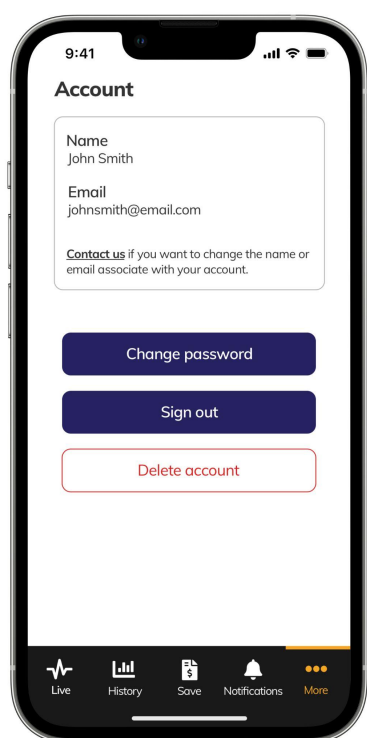

Figure 1 - New MyEnergy account management features

Hot water insights

Hot water systems are a critical but often overlooked part of a household or business... until they break! They are often installed in locations that are not accessed frequently and the only sign that something might be wrong with a system is when the water goes cold

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[4] https://developer.apple.com/news/?id=mdkbobfo

or exhibits obvious leaking. However, there are a number of situations that can be identified from the energy consumption data of different types of hot water systems.

Wattwatchers is developing a suite of insights around electric hot water systems in partnership with Shifted Energy.[5] These insights cover both maintenance alerts (top and bottom element failures and water leaks) and potential efficiency improvements. In this partnership Shifted Energy ingests MEM data, applies its machine learning algorithms to the data and then returns insights back to Wattwatchers for presentation to the customer through the MyEnergy app.

This process uses machine learning to detect the different load types (hot water system, AC, pool pump, etc.) based on the load pattern. This provides Wattwatchers with a way to verify the configuration of installed devices. Initial insights indicate that while a very small number of devices may have one or more misconfigured loads, the vast majority (over 98%) of devices in the field are correctly configured.

This project is Wattwatchers' first foray into the realm of machine learning and it has required some adjustment compared to how we normally develop software. Most importantly, verifying the accuracy of some insights is extremely difficult—if not impossible—without feedback from the end user. These insights will therefore only be fully verified with the help of customers once the feature is live in the MyEnergy app.

High-resolution carbon accounting

Most carbon emission calculations are performed using static factors that average out the emissions intensity of the Australian grid, by state and territory, over a year. This does not take into account the impact of consumption in periods when renewables are highest, and thus the carbon emissions of that consumption may actually be lower.

By taking into account the time varying emissions intensity of the grid and processing this with the granular 5 minute resolution data captured by Wattwatchers devices, we have been able to use the MEM data set for research into what we are calling "high-resolution carbon accounting." This work has thus far resulted in a series of blog posts illuminating our process and learnings[67] with plans to develop it into a feature in the MyEnergy app.

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[5] https://wattwatchers.com.au/hot-water-insights-will-support-customers-for-all-electric-living/

[6] https://wattwatchers.com.au/hourly-carbon-accounting-for-greater-accuracy/

[7] https://wattwatchers.com.au/high-resolution-carbon-accounting-modelling-better-emissions-estimates/

We confirmed this by comparing the emissions estimates from high-resolution carbon accounting to estimates obtained using average annual emissions intensities for 488 residential sites over a one-year period. Annual average accounting underestimated emissions up to 20% for some sites and overestimated emissions up to 80% for another. The emissions intensity of the grid exhibits strong day/night patterns and to a lesser extent seasonal patterns. High-resolution carbon accounting incorporates these patterns. Emissions estimates using higher-resolution data are therefore more accurate than those obtained from calculations using an annual average emissions intensity.

We observed the largest estimation errors for sites in South Australia, the state with the highest percentage renewable energy generation of mainland NEM states. Accordingly, we expect estimation errors of annual average accounting to increase in the other NEM states over the coming years, as ever more renewables are added to the grid.

Through this work we were able to verify that the MyEnergy data set is of high quality and suitable for advanced analysis to support the transition to a Net Zero economy over the coming years.

Legal and Governance

Establishing a lean data services agreement for rapid prototyping

A short-form commercial term sheet has been developed to support new MEM data services customers, enabling them to rapidly develop prototypes and pilot projects without the need for extensive negotiation and legal review.

The agreement is a straightforward two-sided agreement that states how the data can be used, as well as identifying and intellectual property developed by each party as being their own.

Wattwatchers has now completed 4 of these agreements with a number of commercial and educational institutions as part of pilot project activities, and issued additional agreements to other parties as part of ongoing commercial discussions.

This lean agreement has streamlined the commercial process to access MEM data and made it easy for MEM Data Services customers to start working with MEM data as quickly as possible.

Regulatory

Participation in Consumer Data Rights (CDR) is costly

The MEM informs and guides Wattwatchers' participation in and monitoring of relevant regulatory processes, including the long-running Consumer Data Right (CDR) for Energy[8] initiative, the recently recommenced Power of Choice metering review by the Australian Energy Market Commission (AEMC), and earlier this year the Better Bills Guideline consultation by the Australian Energy Regulator (AER).

With the imminent go-live of the CDR for Energy, we have identified that the costs to become accredited are potentially in the order of $250k to $2M as a data holder or data recipient. However, there are opportunities for lower cost points of entry using derived data from accredited participants that will be investigated in the next milestone period.

These costs are prohibitive for smaller companies to participate and Wattwatchers has been able to establish the MEM to provide access to near-real time energy data based on a set of similar principles and published APIs at a much lower cost point.

Wattwatchers continues to engage in a range of other regulatory and market reform consultation processes leveraging the experience from the MEM project.

The industry is sensitive to the potential for privacy breaches

In light of the recent major Australian cybersecurity and data breach events at Optus, Medibank and Telstra, the industry and consumers have a heightened awareness of how private data is being handled, and the impact this can have on customers.

Wattwatchers maintains an Information Security Policy that was developed as part of the MEM project as well as our business Privacy Policy.[9] A review of the Wattwatchers MEM systems was also completed in the last milestone period by an independent cyber security services provider. This review indicated Wattwatchers was in the upper quartile of the industry average indicating a strong security posture with no high or very high risks identified.

Wattwatchers continues to treat all of the data we collect and produce—both anonymised and private data—with the utmost respect and in compliance with the Australian Privacy Act and our own Privacy Policy.

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[8] https://www.energy.gov.au/government-priorities/energy-markets/consumer-data-right-energy
[9] https://wattwatchers.com.au/privacy/

MEM Applications

MyEnergy as companion app

Wattwatchers had previously engaged a number of rollout partners who use Wattwatchers devices and have developed their own apps, in-line with the 'app store for energy' model being tested in this project.

The flexible Wattwatchers MEM model allows these businesses to each provide their own specialised services and capabilities to their customers while providing a communication channel—such as in-app or direct email communications—for promoting MEM offers.

During the design phase of the standalone marketplace app required for some of these rollout partners, it became apparent that this app would not be a strong enough proposition for end customers.

This has resulted in a repositioning of the MyEnergy app with a focus on insights. This means the app will no longer compete with 3rd-party apps of our rollout partners, but instead becomes a companion to those apps.

The insights will be presented on a new screen within the app, called 'Flow.' This screen is a feed of insights, tips and more. Marketplace offers will be presented in the Flow as well. Besides removing the need for a standalone marketplace app, repositioning the MyEnergy around insights through the Flow has a number of other benefits:

- Actionable insights are more valuable to most users than well-presented data. This hunger for insights has become very apparent in a number of rounds of user research we have conducted.
- It will be easier to engage users with new features, as features can be introduced in the Flow, i.e. users aren't required to discover new features in the app.
- The Flow solves the 'tumbleweeds' problem for the MyEnergy marketplace. Because marketplace offers are presented within the Flow in amongst other content, it's not a problem to start the marketplace with only a few offers.
- The Flow can be driven by smart meter data (in a reduced form) as an alternative to Wattwatchers data.
- The Flow makes it easier to launch new functionality, as we can launch new concepts with a limited featureset, and enhance them over time.
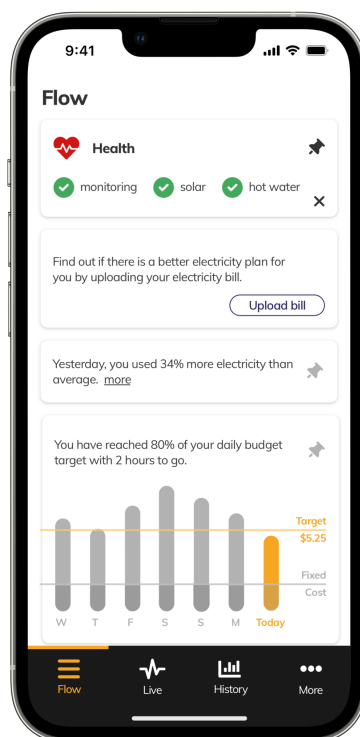
Figure 2 - New MyEnergy Flow features (in development)

Next Steps

The My Energy Marketplace project will continue to deploy the remaining 2,150 residential and small business sites in an accelerating trajectory over the final 6 months of the project. Additional school packages will also be installed along with integrating data from an additional 600 non-Wattwatchers devices.

The installation and data services learnings are being continually fed back to our partners to improve the device installation quality and site data capture processes, which ultimately improves the quality of the data available to provide MEM Data Services that are now being established.

App development will be focused on the Marketplace features based on the lessons learnt and the user engagement and market research conducted in this milestone period.

New opportunities are emerging in the data services space to utilise the MEM data for its intended purpose. This forms part of a key shift to ramp up and deliver these services as the project enters the final year.

Wattwatchers is progressing towards successfully completing the key project outcomes to deliver a new range of innovative data services to energy and data users in the Australian and international markets.

More Information

If you would like more information regarding the My Energy Marketplace project, please contact us using the links below.

Website: https://wattwatchers.com.au/about/#contact-us
Email: info@wattwatchers.com.au